Mara Attia (they/them)
Postdoctoral Researcher in Exoplanet Science

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Mara Attia started their higher education at **École Polytechnique** (Paris), one of the leading French institutions in Science, where they had general courses in Mathematics, Theoretical Physics, and Computer Science. Just before obtaining their **master's degree** in September 2019, they conducted a research internship at the Geneva Observatory with Profs. Vincent Bourrier and David Ehrenreich on exoplanetary atmospheres and orbital architectures, for which they received the Research Internship Award in Astrophysics and Cosmology from École Polytechnique.

Afterwards, Mara Attia went to **ETH Zurich** to deepen their knowledge in Astrophysics through a **second master's degree**, which they obtained with high honors in February 2021 (5.8/6 average grade). While simultaneously continuing their collaboration with the Geneva Observatory, they followed specialized courses in Astrophysics and Cosmology at ETH and carried out a Master Thesis at the University of Zurich with Prof. Romain Teyssier on primordial magnetic fields during the Epoch of Reionization.

With their acquired modeling and analysis skills, and general background in Astrophysics, Mara Attia went back to the **Geneva Observatory** in March 2021 for a **PhD thesis**. Combining observations, theory, and modeling, their main line of research is studying the interplay between dynamical and atmospheric phenomena in the long-term evolution of exoplanets close to their stars. With their supervisors Profs. Vincent Bourrier and Emeline Bolmont, they have been involved in several publications, conference contributions, successful observing time proposals, and observing campaigns. They finished their PhD thesis in three years with high honors in 2024, before continuing their project in a short postdoctoral mission in Geneva.

Currently holder of a **SNF Postdoc.Mobility fellowship**, Mara Attia started a new project in May 2025 at the **Kapteyn Astronomical Institute** (Groningen) in cooperation with Prof. Tim Lichtenberg in the field of exoplanet climate evolution and interior melting processes. The aim is to transition toward studying terrestrial planets and align their research closer with ambitious exoplanet missions planned for the next years.

Areas of study:
- Secular dynamical evolution
- Orbital migration pathways
- Atmospheric characterization
- Interior mechanisms
- Atmospheric evaporation processes
- Hot Neptune desert

Peer reviewed papers:

- 2025 March, “TOI-512: Super-Earth transiting a K-type star discovered by TESS and ESPRESSO”, Rodrigues et al., A&A, 695, 237.
- 2024 November, “The ANTARESS workflow I. Optimal extraction of spatially resolved stellar spectra with high-resolution transit spectroscopy”, Bourrier et al., A&A, 691, 113.
- 2024 May, “Discovery of two warm mini-Neptunes with contrasting densities orbiting the young K3V star TOI-815”, Psaridi et al., A&A 685, 5.
- 2024 January, “The SOPHIE search for northern extrasolar planets. XIX. A system including a cold sub-Neptune potentially transiting a V = 6.5 star HD 88986”, Heidari et al., A&A 681, 55.
- 2023 November, “TOI-858 B b: A hot Jupiter on a polar orbit in a loose binary”, Hagelberg et al., A&A 679, 70.
- 2023 August, “DREAM. III. A helium survey in exoplanets on the edge of the hot Neptune desert with GIANO-B at TNG”, Guilluy et al., A&A 676, 130.
- 2023 July, “Three Saturn-mass planets transiting F-type stars revealed with TESS and HARPS. TOI-615b, TOI-622b, and TOI-2641b”, Psaridi et al., A&A 675, 39.
- 2023 June, “DREAM. II. The spin-orbit angle distribution of close-in exoplanets under the lens of tides”, **Attia et al.**, A&A 674, 120.
- 2023 April, “Hot Exoplanet Atmospheres Resolved with Transit Spectroscopy (HEARTS). VIII. Non-detection of sodium in the atmosphere of the aligned planet KELT-10b”, **Steiner, Attia et al.,** A&A, 672, 134.
- 2023 January, “DREAM. I. Orbital architecture orrery”, **Bourrier, Attia et al.**, A&A 669, 63.
- 2022 December, “Rossiter-McLaughlin detection of the 9-month period transiting exoplanet HIP41378 d”, Grouffal et al., A&A 668, 172.
- 2022 December, “Hot Exoplanet Atmospheres Resolved with Transit Spectroscopy (HEARTS). VII. Detection of sodium on the long-transiting inflated sub-Saturn KELT-11 b”, Mounzer et al., A&A 668, 1.
- 2022 September, “GJ 3090 b: one of the most favourable mini-Neptune for atmospheric characterisation”, Almenara et al., A&A 665, 91.
- 2022 July, “The polar orbit of the warm Neptune GJ 436b seen with VLT/ESPRESSO”, Bourrier et al., A&A 663, 160.
- 2021 October, “The key impact of the host star’s rotational history on the evolution of TOI-849b”, **Pezzotti, Attia et al.**, A&A 654, 5.
- 2021 October, “Introducing SPHINX-MHD: the impact of primordial magnetic fields on the first galaxies, reionization, and the global 21-cm signal”, Katz et al., MNRAS 507, 1254.
- 2021 June, “Cosmological magnetogenesis: the Biermann battery during the Epoch of reionization”, **Attia et al.**, MNRAS 540, 234.
- 2021 March, “The JADE code: Coupling secular exoplanetary dynamics and photo-evaporation”, **Attia et al.**, A&A 647, 40.
- 2020 September, “Hot Exoplanet Atmospheres Resolved with Transit Spectroscopy (HEARTS). V. Detection of sodium on the bloated super-Neptune WASP-166b”, Seidel et al., A&A 641, 7.

Contributions in international conferences:

- 2024 June, Exoplanets 5, Leiden (Netherlands), poster.
- 2023 July, Towards other Earths III, Porto (Portugal), oral presentation.
- 2023 April, Protostars and Planets VII, Kyoto (Japan), poster.
- 2022 June, European Astronomical Society (EAS) Annual Meeting, Valencia (Spain), poster.
- 2022 June, Journées de la Société Française d’Astronomie et d’Astrophysique (SF2A), Besançon (France), oral presentation.
- 2022 April, PlanetS General Assembly, Grindelwald (Switzerland), oral presentation.

- 2021 December, ExoSystèmes II, Toulouse (France), oral presentation.
- 2021 September, Europlanet Science Congress (EPSC), virtual, oral presentation. Was granted the “virtual Outstanding Presentation Contest” award.
- 2021 June, Programme National de Planétologie (PNP), organized by Société Française d’Astronomie et d’Astrophysique (SF2A), virtual, oral presentation.

Published codes:

- The JADE model: a sophisticated Python framework for simulating the coupled evolution of exoplanetary atmospheres and orbital dynamics in hierarchical three-body systems.

Awards/grants:

- **2025 May, SNF Postdoc.Mobility Fellowship.**
- 2022 March, SSAA Funding Award.

Observations:

- Regular observer with the SOPHIE instrument on the 193-cm telescope at Observatoire de Haute-Provence, France.
- Regular observer on the EULER telescope in La Silla, Chile.
- PI of 1 observing program on ESPRESSO (2 nights), 1 observing program on HARPS (1 night), 1 observing program on SOPHIE (8.3 nights), and 1 observing program on GIARPS (2 nights).
- Co-I of 4 observing programs on ESPRESSO, 1 observing program on HARPS, 1 observing program on NEID, 1 observing program on NIRSPEC, and 1 observing program on CHEOPS.

Supervision:

- 2023 May – 2023 June, co-supervised Léonie Hoerner (Université de Lorraine) for a Master internship on modeling exoplanetary water atmospheres.
- 2022 April – 2022 August, co-supervised Théo Vrignaud (École polytechnique, Paris) for a Master thesis on the analysis of the Rossiter—McLaughlin effect of ultra-short-period rocky exoplanets.
- 2022 February – 2022 June, supervised Leon Kawang Kwok (University of Geneva) for a Master project on exoplanetary dynamical tides.
- 2021 November – 2022 March, supervised Aymeric Carchereux (University of Geneva) for a Bachelor project on exoplanetary radius pulsations induced by the Kozai—Lidov mechanism.
- 2021 September – 2022 January, participated in the supervision of Nathan Monnet (École Polytechnique Fédérale de Lausanne) for a Master project on the analysis of the Rossiter—McLaughlin effect of the Moon.

Teaching:

- 2023 Spring, Teaching Assistant for the “Planetary Atmospheres” and “Planetary Formation and Evolution” courses (University of Geneva).
- 2022 Spring, Teaching Assistant for the “Planetary Atmospheres” course (University of Geneva).

Outreach:

- Participated in the “Exoplanètes : Art, Science & Fiction” outreach project, where collaborators from the Exoplanets group of the Geneva Observatory were associated with students from the École supérieure de bande dessinée et d’illustration de Genève to create posters illustrating their research.

- Participated in the “Astro-coffees” outreach project, organized by the Geneva Observatory and the Geneva Museum of Sciences, where astronomers met with the general public to answer their questions on astrophysics-related topics.
- Press releases on the results of Bourrier, Attia et al. (2023, A&A 669, 63), issued by the University of Geneva and ESO.

Social:

- Active member of the Diversity, Equity and Inclusion committee of the Geneva Observatory. Organized several events to promote diversity and inclusion at the Observatory.
- Strongly involved locally in advocating for LGBTQ+ rights and helping precarious transgender communities in Geneva.

Spoken languages:

- French: native.
- Arabic: native.
- English: fluent.
- German: intermediate.